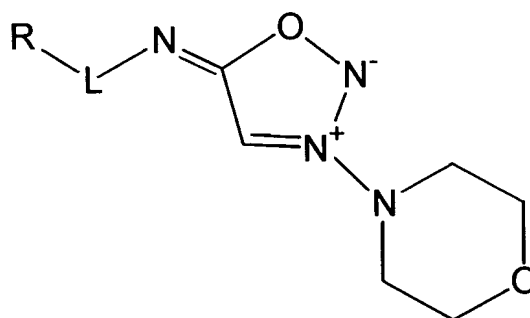


CLAIMS

We Claim:

1. A sugar-modified linsidomine (SIN-1) comprising a sugar moiety, a SIN-1 moiety and a glycosidic bond disposed between the sugar and SIN-1 moieties, said sugar-modified SIN-1 having the general structure



wherein L is a bond or a bifunctional linker group and wherein R is the sugar moiety and can comprise any carbohydrate.

2. The sugar modified SIN-1 according to claim 1, wherein L is a bifunctional linker group.

3. The sugar-modified SIN-1 according to claim 2, wherein the linker group is a carbonyl-containing group.

4. The sugar-modified SIN-1 according to claim 1, wherein R is a monosaccharide.

5. The sugar-modified SIN-1 according to claim 4, wherein R is selected from the group consisting of glyceraldehyde, erythrose, threose, ribose, arabinose, xylose, lyxose, allose, altrose, glucose, mannose, gulose, idose, galactose, talose, erythrulose, ribulose, xylulose, psicose, fructose, sorbose, and tagatose.
6. The sugar-modified SIN-1 according to claim 4, wherein R is glucose.
7. The sugar-modified SIN-1 according to claim 4, wherein R is galactose.
8. The sugar-modified SIN-1 according to claim 4, wherein R is a furanose or pyranose ring structure.
9. The sugar-modified SIN-1 according to claim 1, wherein R is a disaccharide.
10. The sugar-modified SIN-1 according to claim 9, wherein R is a member selected from the group consisting of sucrose, lactose, and maltose.
11. The sugar-modified SIN-1 according to claim 1, wherein L is a glycosidic bond.
12. The sugar-modified SIN-1 according to claim 11, wherein the glycosidic bond is in an α configuration.

13. The sugar-modified SIN-1 according to claim 11, wherein the glycosidic bond is in a β configuration.

✓ 14. A compound which is N-(β -D-glucopyranosyl)-carbonyl-3-morpholinosydnonimine, N-(α -glucopyranosyl)-carbonyl-3-morpholinosydnonimine, N-(β -D-galactopyranosyl)-carbonyl-3-morpholinosydnonimine, or N-(α -D-galactopyranosyl)-carbonyl-3-morpholinosydnonimine.

✓ 15. A pharmaceutical composition, comprising:
a therapeutically effective amount of a first sugar-modified SIN-1; and
a pharmaceutically acceptable carrier.

16. A pharmaceutical composition in accordance with claim 15, further comprising a therapeutically effective amount of a second sugar-modified SIN-1.

17. A pharmaceutical composition according to claim 15, wherein the carrier comprises a liquid vehicle.

18. A pharmaceutical composition according to claim 17, wherein the liquid vehicle comprises a member selected from the group consisting of water, Ringers-Lactate, DMSO, ethanol, and glycerol.

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19. A pharmaceutical composition according to claim 15, wherein the carrier comprises one or more pharmaceutically acceptable excipients.

20. A pharmaceutical composition according to claim 19, wherein said composition is in the form of a pill, tablet, lacquered tablet, coated tablet, hard gelatin capsule, soft gelatin capsule, solution, syrup, emulsion, suspension, aerosol, suppository, ointment, gel, or a paste.

21. A method of generating nitric oxide, comprising:
providing a sugar-modified SIN-1 according to claim 1; and
contacting the sugar-modified SIN-1 with an appropriate glycosidase.

22. A method of generating nitric oxide according to claim 21, wherein the sugar-modified SIN-1 is in the form of a pharmaceutical composition comprising a therapeutically effective amount of the sugar-modified SIN-1 and a pharmaceutically acceptable vehicle.

23. A method of generating nitric oxide according to claim 21, further comprising contacting the sugar-modified SIN-1 with a cell and internalizing the sugar-modified SIN-1 into the interior of the cell.

24. A method of generating nitric oxide according to claim 21, further comprising releasing NO from the SIN-1 moiety of the sugar-modified SIN-1.

25. A method of generating peroxynitrite anion, comprising:
providing a sugar-modified SIN-1 according to claim 1;
contacting the sugar-modified SIN-1 with an appropriate glycosidase;
forming superoxide ion;
releasing NO from the SIN-1 moiety of the sugar-modified SIN-1; and
allowing the NO and superoxide ion to react to form peroxynitrite anion.

26. A method of generating peroxynitrite anion according to claim 25, wherein the sugar-modified SIN-1 is in the form of a pharmaceutical composition comprising a therapeutically effective amount of the sugar-modified SIN-1 and a pharmaceutically acceptable vehicle.

27. A method of generating peroxynitrite anion according to claim 25, further comprising contact the sugar-modified SIN-1 with a cell and internalizing the sugar-modified SIN-1 into the interior of the cell.

28. A method of selectively destroying a cell, comprising contacting a therapeutically effective amount of a sugar-modified SIN-1 with said cell and contacting the sugar-modified SIN-1 with an appropriate glycosidase.

29. A method of selectively destroying a cell in accordance with claim 28, further comprising internalizing the sugar-modified SIN-1 into the interior of said cell.

30. A method of selectively destroying a cell in accordance with claim 28, wherein the sugar-modified SIN-1 is able to selectively bind to said cell.

31. A method of selectively destroying a cell in accordance with claim 28, wherein said cell comprises a cancer cell.

32. A method of selectively destroying a cell in accordance with claim 31, wherein said cell comprises a cell in a solid tumor.

33. A method of selectively destroying a cell in accordance with claim 32, wherein the solid tumor is a tumor selected from the group consisting of tumors located in muscle, neural, ocular, colon, prostate, breast, lung, skin, liver, bone, pancreas, ovary, testis, bladder, kidney, and brain tissue.

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